Vol. 4 No. 8

OCTOBER, 1948

SPE NEWS

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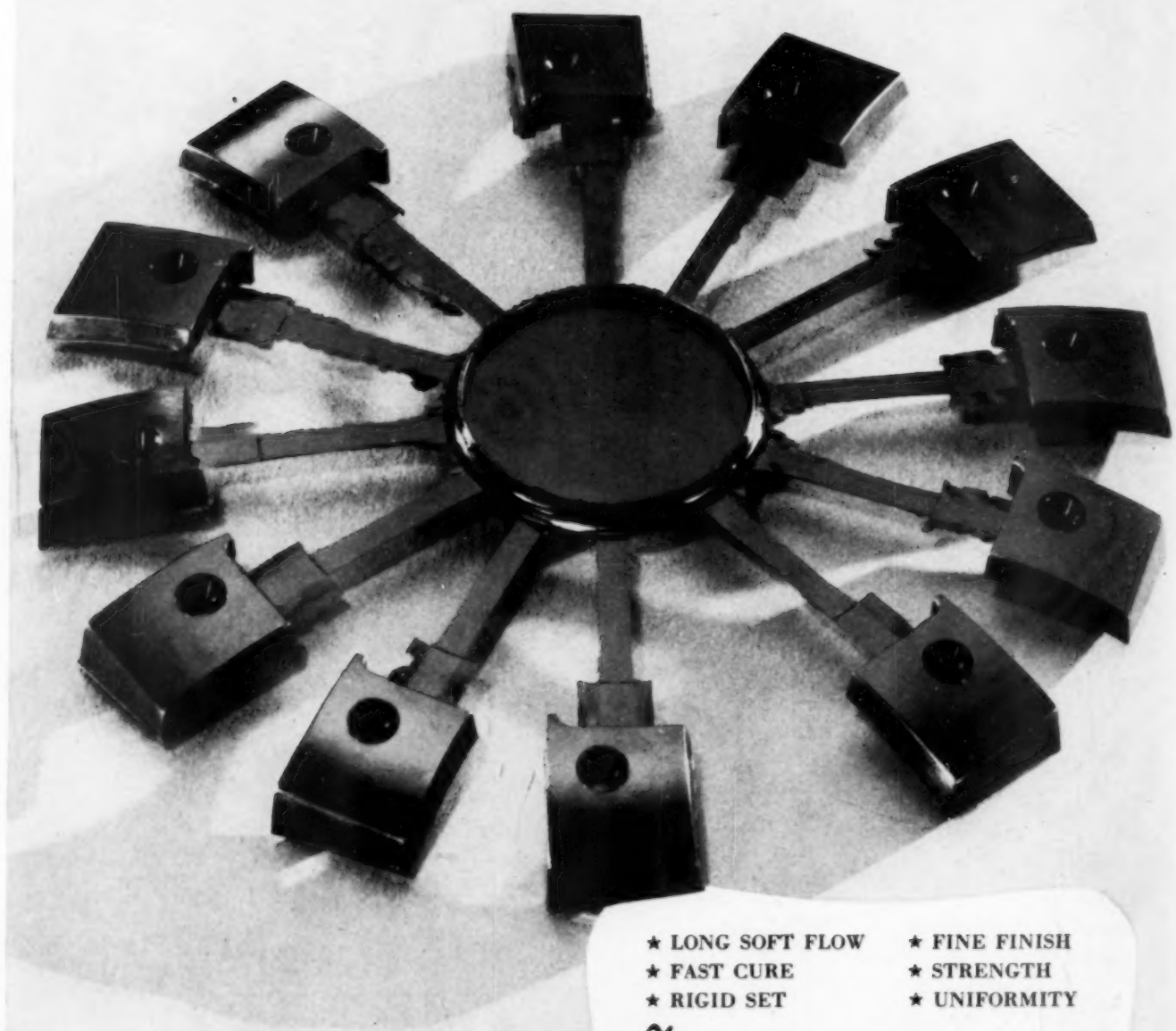

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SPE NEWS

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Volume 4 · Number 8

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Cleveland, Rocky Mountain, S. California and Golden Gate Sections.

New Books

The Plastics Buyer, 1948 edition is a valuable reference book for buyers of plastics merchandise. The main feature is an alphabetical listing of plastics items, from "Adhesives and Cements' to 'Zippers', and after each item are the names and addresses of the manufacturers of the article. This is followed by a list of all plastics manufacturers in the U. S. in alphabetical order. The book begins with a description of the different plastics materials, and includes a presentation of some of the newer plastics items to hit the market.

The Plastics Buyer is published by the Cleworth Publishing Co., 551 Fifth Avenue, New York 17, N. Y. Paper bound, 240 pages, it sells for $3 a copy.

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VARIABLES AFFECTING THE BOND STRENGTH OF LAMINATED PLASTICS

By RAYMOND R. HOLMAN

Fabricon Products, Inc.

Mr. Holman's article shared the third national award in last year's SPE Prize Paper contest. In presenting this paper we hope that it will inspire its readers to enter the competition this year. The restricion on age of contestants has been eliminated so that anyone capable of writing a technical article on plastics may compete.

The following work was undertaken in an attempt to determine the effect of resin content, volatile matter, type of base paper and type of laminating varnish on the bond strength of paper base laminates.

Up to the present time there has been no comprehensive study published of laminated plastics in bond strength or any research data available concerning the conditions under which optimum bond strength may be obtained.

This experiment involved only the testing of a few of the more important grades or grade variations of industrial laminates.

In this report data will be found comparing:

(A) Volatile to bond strength, using various volatiles from 4.0 7.6 percent keeping resin content, type of paper and type of varnish constant.

(B) Resin content to bond strength using resin contents of 45, 50 and 55 percent, keeping volatile, paper and varnish constant.

(C) Type of base paper to bond strength. Type one is Alpha and type two is Kraft. Volatile, resin content and type of varnish is held constant.

(D) Type of laminating varnish to bond strength a phenolic (mechanical type) and a cresylic type varnish were used. Volatile, resin content and type paper were held constant.

PROCEDURE FOR TREATING, LAMINATING AND TESTING

The materials chosen to work with were only a few of the many possible combinations of paper and resin that could be employed in a more detailed study. Resin content and volatile were chosen as those most representative of materials treated in the industry today.

Treating:

A phenolic (mechanical type) laminating varnish and a cresylic type were used to treat an alpha and a kraft paper. Both were 7 mil (.007″) papers.

The varnish was applied to the paper by the dip and squeeze roll method and then passed through a drying oven to partially polymerize, or condense, the resin. All the material was run to specific resin contents and each specific resin content was cured to a given volatile. Those volatiles which did not compare favorably with the desired value as they came off the treating oven, were dryed to the required volatile by curing in a constant temperature laboratory oven.

The volatile content of the material was checked by calculating the percent loss in weight after being subjected to a temperature of 320°F for a period of 10 minutes in the laboratory oven in accordance with SPE 100-M test mehod.

Laminating:

Each laminate made was 7″x7″x ½″ and all panels in the report, with the exception of materials molded for the bond strength v/s laminating pressure series, were laminated at 1200 PSI for a period of 30 minutes at a temperature of 325°F. All panels were loaded into a hot laboratory laminating press using hot cawls and pulled while still hot.

After laminating the panels were cut into one inch squares on a band saw and then sanded to insure flatness.

Testing:

Ten specimens were tested from each panel, five with machine direction perpendicular to molding pressure and five across machine direction perpendicular to molding pressure.

All samples were tested according to A. S. T. M. (D-229-43).

A Baldwin Southwark testing machine was used with a cross head speed of .050″ per minute.

While testing the samples, the approximate room temperature was 74°F.

The five samples in each grain direction were run to ultimate bond strength and an average taken of the five readings. Readings given are in pounds to break the bond. The few values that did not conform to the results obtained from other samples of the identical specimen were assumed not to be representative of the given specimen and were therefore discarded.

THE EFFECT OF LAMINATING PRESSURE ON BOND STRENGTH

Panels laminated at the pressures indicated upon testing, were found to have a great variation in bond strength. At lower pressures, the bond strength was high while at the higher laminating pressure ranges, the bond strength was lower.

It may be found that at lower pressures than those given, the bond strength will start to decrease.

At higher pressures it may be found that the strength will begin increasing again.

P.S.I.	Bond Strength WM	Bond Strength CM
500	1520	1445
600	1513	1426
700	1496	1398
800	1461	1341
900	1453	1390
1000	1433	1393
1100	1408	1378
1200	1447	1376
1300	1404	1363
1400	1394	1124

EFFECT OF VOLATILE PERCENT ON BOND STRENGTH

Percent volatile has a greater effect on the bond strength of laminated plastics than any other variable factor studied here with the possible exception of base paper.

For example let us consider the kraft base paper treated with the general purpose phenolic varnish to a resin content of 45 percent. Starting with a volatile of 7.40, a force of 1,090 pounds was necessary to break

(Next Page Please)

the sample but upon lowering the volatile to 4.70, the bond strength increases to 1,319 pounds. This was found to be true of both papers and both varnishes tested and all ranges of resin content tested.

But in the example mentioned above when the percent volatile is lowered still further to 4.0 the bond strength drops to 1,178 pounds.

This seems to be true in all resin contents with the exception that in higher resin contents, the point at which the bond strength begins to drop is also proportionately higher.

In other words, with 45 percent resin content the peak in bond strength was reached at 4.74 percent volatile. At 50 percent resin content, the peak was reached at 5.75 percent volatile. With 55 percent resin content the optimum bond strength will be at 6.18 percent volatile.

Kraft Paper 50 Percent Resin Content.

Percent VM	Bond Strength WM	CM
7.52	1125	1105
7.12	1217	1141
6.96	1182	1150
5.88	1242	1166
5.75	1339	1265
4.70	1210	1188
4.0	1337	1266

EFFECT OF DIRECTIONAL PROPERTIES ON BOND STRENGTH

Throughout the entire work it was found that bond strength varies with the machine or grain direction of the paper no matter what resin content, volatile, paper or varnish was used.

The greater strength values were found to be in the "with machine" direction. Only six out of sixty-four samples tested had greater strength "cross machine" direction, but the difference was negligible and could have been caused by experimental error.

Directional Properties

Kraft paper with Phenolic varnish 50 percent resin

Volatile	With Machine	Cross Machine
5.75	1339	1265
5.88	1242	1166
6.96	1182	1150
7.52	1125	1105

EFFECT OF BASE PAPER ON BOND STRENGTH

In working with the two types of paper, Alpha and Kraft, it was discovered that the Kraft is by far the weaker of the two. This may be due to the harder surface on the Kraft, whereas the Alpha paper is more absorbent and thus the varnish better penetrates into the fibers of the paper.

Base Paper VS Bond Strength

50 percent Resin Content, Phenolic type Varnish

Volatile	Alpha Paper	Kraft Paper
5.8	1393	1242
6.8	1208	1182
7.5	1218	1125

50 percent Resin Content Cresylic type Varnish

Volatile	Alpha Paper	Kraft Paper
5.6	1258	967
6.7	1104	968
7.5	974	945

TYPE OF LAMINATING VARNISH VS BOND STRENGTH

Tests on the two types of laminating varnish used showed enough difference to report on it.

The Phenolic (Mechanical type) varnish was superior to the Cresylic no matter what the resin content, volatile or type of paper.

It was noted, however, that as the volatile decreased the difference between the two varnish types increased.

It was also found that in the case of the phenolic varnish there was a greater increase in bond strength for each percent of volatile than the cresylic varnish.

This was found to be true of all resin contents as well as both papers used.

Laminating varnish VS Bond Strength

ALPHA PAPER 45% RESIN CONTENT

% VM	Cresylic Varnish	Phenolic Varnish
7.5	1225	1260
6.5	1246	1335
6.0	1260	1373
5.5	1275	1415
5.0	1290	1470

EFFECT OF RESIN CONTENT ON BOND STRENGTH

Resin contents of 45, 50 and 55 percent were tested for bond strength keeping volatile, type of laminating varnish and type of base paper constant.

It was observed that in the majority of materials tested, the bond strength dropped when 45 percent resin content was reached. (See chart below). In the case of Kraft paper treated with the cresylic type varnish, the drop in the bond strength from 45 to 50 percent was great but the Alpha paper treated with the phenolic type varnish was very slight.

All laminates tested were found to have greater bond strength values at 45 percent resin content.

(Please Turn to Inside Back Cover)

Section Notes

PHILADELPHIA members met at the Dairy Dell Institute, September 21st to hear H. E. Buecken speak on the Design of Extrusion Equipment. Mr. Buecken was design and development engineer for National Rubber Machinery for nine years and is now manager of the plastics machinery division.

CHICAGO members held a joint SPE-SPI golf outing on September 23rd, at the Westward-Ho Country Club. The outing marked the beginning of the new period of cooperation by the Chicago groups, and afforded members of the organizations a chance to get together for the final golfing event staged by the Chicago plastics industry during the current season.

DETROIT held an open forum discussion on "How to Determine the Number of Cavities for a Compression Mold to be Used in a Press of a Given Tonnage", on September 17th. The program was led by SPE Professional Activities Committee Co-Chairman John Totten of the Ford Motor Company. A movie by Hercules Powder entitled "Problem-Solution-Result" was also shown.

ROCHESTER heard Dr. Harold Smith of Eastman Kodak tell about "Gel Lacquer for Protective Plastic Coating" on September 21st at Lorenzo's restaurant. The very interesting program was illustrated with slides, and highlighted by a demonstration of the application of Gel Lacquer.

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THE GOLDEN GATE

A Section History

By JOHN G. ROBB

The Golden Gate Chapter serving San Francisco, Oakland and the counties commonly called the Bay Area became a part of the SPE on October 8, 1947. However, its beginning dates back to 1945 when Mr. Dubois suggested its formation to the writer. A meeting of nine members of the industry was called, but unfortunately there was no meeting of minds on the advisability of forming a SPE group.

In the spring of 1947 Mr. Orr gave the movement new impetus and, as a result, a meeting of nine prospective members was called and this time the idea of a local chapter received the hearty support of all present. This group became the first board of directors of the Golden Gate Chapter. It consisted of John Robb, American Molding Co., President; Verne Rollins, Monsanto Chemical Co., Vice President and National Director; Clark Robinson, Robinson-Howell Co., Secretary-Treasurer; Joe Sherk, Dow Chemical Co.; Roy Elke, Automatic Plastics Co.; Dick Fontes, Advance Plastics; Ken Holland, Plastic Laminates; Lloyd Griffith, Griffith Tool & Die Co., and Bob Dykehouse, Stewart Plastics.

The group was selected so as to be representative of the various phases of the plastics industry in and around San Francisco.

Since this beginning we have grown to 37 members and have an attendance of from 45 to 60 at our meetings, which are arranged by Program Committee Chairman Verne Rollins. Highlights of the year's program included talks by Dr. Marie Bentevoglio of Celanese Plastics Corp., Chick Norris, Bakelite Corp.; Marcel Vogell, local Fluorescent Lighting Engineer, and Baldwin Vale, well known San Francisco patent attorney.

Meetings are held once a month except during the summer, and the meeting place is changed from month to month by House Committee chairman, Lloyd Griffith, so as to give the members an opportunity to sample the food at various famous San Francisco restaurants.

As we approach the end of our first year we look forward to a good increase in membership as our full program gets into full swing with speeches scheduled by Charlie Thurman of Monsanto and Al Vogel of Bakelite. In the coming year we plan to extend our policy of having one of our own members speak briefly at each meeting after the principal speaker, and to inject a round table discussion meeting occasionally to break the routine.

Personals

Member CARL E. SCHMITZ, Vice-President and Director of Engineering of the Crane Packing Company, has been appointed a member of the Annual Awards Committee of the American Society of Lubrication Engineers. This Committee annually awards the Alfred E. Hunt Memorial Medal, affords two persons honorary life membership awards in the American Society of Lubrication Engineers and also presents an annual Junior award.

Dr. ROBERT SAVAGE, member of the Central Ohio section, has left Batelle Memorial Institute to become professor of chemical engineering at Case Institute of Technology.

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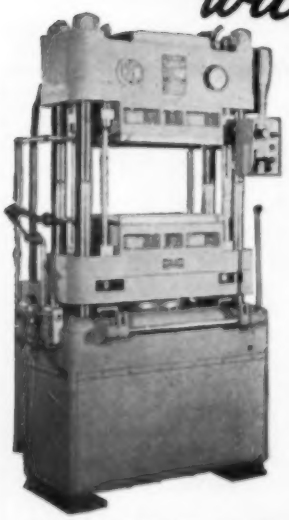

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BERYLLIUM-COPPER MOLDS SHOWN AT NEW YORK

By ARTHUR M. MERRILL

The New York Section, SPE, held its second regular dinner meeting of the season on October 7 at the Hotel Sheraton. Approximately 33 members and guests attended and heard J. A. Koons, Process Mold Co., give a very interesting talk on "Cast Beryllium Copper Cavities and Forces." Instead of giving a formal paper on the subject, Mr. Koons displayed numerous beryllium copper cavities and forces together with products made in such molds for the automotive, refrigerator, toy novelty, air conditioning, and other industries. The speaker covered his subject by explaining the factors involved in making each mold or product, and by his answers in the lively discussion period which followed the talk.

The beryllium copper "Hi-Pressure-Cast" cavities and cores made by Process Mold are produced by pouring the alloy around a master steel hob and applying high pressure while the metal is in the molten state. By this means it is possible to produce cavities that cannot be hobbed cold in steel, and with great clarity of detail, uniform density, and irregular parting lines, in any shape or design, and with a surface area of up to 144 square inches. Because a master beryllium cavity is made from the initial hob, a customer can supply a steel hob and obtain both forces and cavities in beryllium.

The original hob supplied by the customer should be made of air-hardening steel. The hob base should have a minimum thickness of two inches, and have several ½—13 holes drilled and tapped at bearing points to provide means of fastening down. The width and length of the hob block must be in even inches, and 1/8-inch must be allowed on the parting line at the top of the hob. This allowance permits machining the face of the resulting cavity. Where dimensional precision is required the hob must allow 0.004 inch per linear inch for shrinkage during casting of the beryllium. The hob must then be hardened and given the specified surface finish.

The beryllium cavities and forces are supplied in either annealed or "as cast" condition, as specified. Upon receipt, the customer is required only to machine the outside diameter of the cavity to square up the cavity blocks, drill for the core pins, and harden by placing the cavities in a box furnace at 575 - 600° F. for three hours. The parts are then removed and allowed to cool in still air. Before using, the cavities are polished and given a flash chrome plating; the plating being necessary for compression molding, thermosetting applications, and rubber molding.

The Section's next meeting will take place on November 8 at the Hotel Sheraton, and will feature a talk by Harold Narcus, Electro Chemical Industries, Inc., on "Plating of Plastic Molded Parts."

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NEW ENGLAND

By GEORGE W. MARTIN

The first meeting of the fall season of the Western New England section was held Thursday, September 9th at the Hotel Sheraton, in Springfield.

As the section president was away, the vice president, Mr. Sherwood Young presided over the meeting. After calling the meeting to order Mr. Young called upon Mr. Petretti, chairman of the National Credentials Committee.

After reminding the members of the National Convention in Philadelphia on Jan. 21st, Mr. Petretti introduced Mr. William Dunnican, chairman of the National By-law committee.

Mr. Dunnican brought the members up to date on the by-law amendments and their effect on the section.

Mr. Ed. Vaille, section secretary, spoke briefly on the new Prize Paper Contest, explaining the details of it, and proposed that the section appropriate the prize money for the local prize paper.

The members voted to award $75.00 as first prize, $50.00 second and $25.00 third prize. It was also moved that the president, Mr. Donohue, appoint a committee to judge the local papers.

Mr. Young then introduced the speaker of the evening, Mr. T. Kresser, of the Monsanto Chemical Co., who presented a paper on "The Mechanics of Dry Extrusion".

This paper was prepared jointly by Mr. Kresser and Mr. E. A. Haddad, of Monsanto. Mr. Haddad was also scheduled to speak but was unexpectedly called away.

Mr. Kresser opened his talk by giving a short summary of the importance and development of dry extrusion.

The geometry of a screw type extruder was discussed and illustrated with well prepared diagrams.

Mr. Kresser used a force-balance to derive a relationship between the principle forces in an extruder.

The nature and relative magnitude of the forces in various regions within the extruder were discussed in considerable detail.

Throughout the discussion, certain conclusions regarding the design and operation of screw type extruders were drawn.

In conclusion, Mr. Kresser expressed the hope that the process of extrusion will develop from its present status as an empirical art to a more sound engineering basis.

An extremely interesting discussion was enjoyed at the end of the talk and the meeting was adjourned.

GOLDEN GATE

By JOHN G. ROBB

The Golden Gate Section of the Society of Plastic Engineers opened the 1948-1949 season with a speech on Plasticizers by Charlie Thurman of Monsanto Chemical Co. The dinner meeting was held September 15th at the Del Mar Restaurant, in San Francisco. Mr. Thurman outlined the problems which confront the chemist in developing plasticizers, and gave a summary of the more important ones used in the various types of plastic material. After the speaker, the Shell Oil Company's picture "Oil for Aladdin's Lamp" was shown.

The October meeting of the Golden Gate Section of the Society of Plastic Engineers will be held October 20th at the Del Mar Restaurant in San Francisco. A record turnout is anticipated for the program which will co-feature a talk on "Recent Developments in Polyethylene and Vinylite", by Al Vogel of Bakelite, and a showing of Boonton Molding Company's picture, "The Shape of Things to Come".

Cal. Plastics Moves

The California Reinforced Plastics Co., moved August 16th, to 1231 Fourth street in Berkeley, California.

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CENTRAL OHIO

By C. W. COOPER

Central Ohio met at the Beechwold Restaurant, Columbus, Ohio, September 9th.

Following the dinner, Mr. George Alexander, Assistant Plant Manager of the General Electric laminating plant at Coshocton, Ohio, talked on laminates. Mr. Alexander presented a very interesting picture of the laminating industry, dividing his discussion into binders, reinforcements and methods. The common binders or saturants, he stated, are the aminoplasts (urea and melamine-formaldehyde resins), the phenolics, and the polyesters. All of these are thermosetting. Another group includes the thermoplastics (alkyds, etc.). The aminoplasts and phenolics are used as aqueous dispersions or "syrups" and the polyesters are applied from organic solvents or from 100% solids baths. Interest has recently been shown in nylon as a saturant but it is too costly. Silicones, too, are expensive but have proven extremely valuable for heat resistant electrical insulation. Bases used for coating in order of their importance include paper, canvas duck and glass fiber. Paper is, of course, the lowest in cost and is used in thicknesses varying from 1 to 16 mils.

The laminating industry has not been "glamorized"—98% of the production is used in industrial applications although this picture is changing somewhat as more decorative laminates are produced.

Mr. C. F. Lucks, Battelle Memorial Institute, Columbus, Ohio, was the featured speaker. Mr. Lucks, who is a physicist and is in charge of the Institute's instrument, heat treating, mechanical testing, thermal conductivity and glass blowing laboratories, spoke on "Technology—The Hub of Better Living". Mr. Lucks talk was popular in nature and included a number of demonstrations of physical phenomena, most of them concerned with electricity or magnetism. One of the chief reasons for the choice of Mr. Lucks as featured speaker was his position as president of the Columubus Technical Council with which the Central Ohio Section has recently become affiliated. At the conclusion of his talk, Mr. Lucks described the advantages of membership in his organization and asked for full cooperation of the SPE membership to obtain the greatest benefit from the CTC.

Future meetings have been planned, insofar as possible, for the second Thursday of each month. The October meeting was scheduled for Thursday, October 14, and was a trip through the General Electric Laminating Plant at Coshocton. Dinner was served in the plant cafeteria.

Section Notes

CLEVELAND-AKRON section met at Tomlinson Hall of Case Institute of Technology, September 24th, to learn of the "Molding and Applications of Resin Impregnated Fibers", from George W. Blum, Professorial Lecturer at Case.

SOUTH TEXAS was host to T. J. Martin, of Monsanto, who spoke on phenolic molding compounds, and who showed two sound movies by way of illustration. The meeting was held October 21st at the Ben Milam Hotel in Houston.

N. W. PENNSYLVANIA, meeting at the Grotto Club, in Erie, Pa., heard a speaker associated with the Lea Co., discuss the topic of "Finishing of Plastics Parts."

Member Is Inventor

BEN FORMAN, member of the New York section is the inventor of a composite screw, or non-conductive fastener. The screw is a plastic screw with a metal head and slot, giving the insulating properties of plastic, with none of the disadvantages of an all plastic screw.

Klippings from Kozy

By WALTER KOSY

That excellent write-up in the Detroit News Pictorial Magazine, on the miniature auto assembly line, showing how the model plastic car that the Hudson Motor Car Company is using for sales and advertising purposes, is made and assembled, failed to mention that a lot of credit is due to some of our local boys for a fine engineering job. BEN GRAY at Toy Founders, originally conceived the idea and designed the model; Carl Holmes and his boys at American Plastics Engineering designed and engineered the molds; Woshyna Plastic Mold and Unicraft made the molds and finally Detroit Macoid molded and assembled the finished car. CARL HOLMES announces that the latest job scheduled for production is a 10-½" model of the four door Kaiser convertible which is really a beauty. The car is spring driven and has four speeds including a reverse. It has a steering wheel that actually turns the front wheels and brakes that really work!!!

We take this opportunity to welcome to the Detroit Chapter, LEE MURPHEY, lately of the Bakelite Company (Canada) Lmtd., and now General Manager of the Fabricon Plastics Division. Lee is of Canadian origin and previous to his connection with Bakelite, he served in the Bomber Command of the Royal Canadian Air Force.

Effective September 1, 1948, TONY D'AGOSTINO has been made General Manager of Detroit Molded Plastics in Rochester, Michigan. Detroit Molded Plastics are custom molders in the injection and compression molding field.

This summer saw a reshuffling of the Bakelite staff in the Detroit office, arising out of a well-merited promotion for JAY SOUTHWELL. Jay has been transferred to Montreal as Sales Manager of Canadian Resins, Lmtd. His work has been taken over by Ray Richards, lately of the Philadelphia office, who is now handling the molding powder end and G. J. WELCH, who is servicing the calandering trade in vinyl resins.

Our thumbnail sketch of the month:

This is a quiet meticulous individual whose courtly manners and bearing reflect those of the city of his birth, Vienna. A graduate of the Colorado School of Mines, he spent some years in the west as a mining engineer. Subsequently, he worked for various advertising agencies in New York and finally, in 1937, he joined the sales staff of large plastic materials supplier. Now Assistand District Manager for this company, he covers the midwest territory out of the Detroit Office. He has served the Detroit Chapter of the SPE as Program Chairman, Director, Secretary, and Vice-President. Fishing is his favorite form of relaxation. Who is he? (See page 8)

ST. LOUIS

By C. TODD CLARK

The Saint Louis Sector started their Fall program with an excellent speaker and program. Attendance was very gratifying, approximately 50 members and guests met for a dinner meeting to hear Dr. Russell B. Akin, Technical Service Engineer, of the Du Pont Co.

Subject was: "Nylon as a Plastic." Various types of nylon plastics which are now available, techniques for molding each type and newly developed applications of this form of nylon as distinguished from nylon filament, were discussed. We are all looking forward to having our Prexy, J. Harry Du Bois as our guest speaker, to address our October meeting. This meeting will be held at the Melbourne Hotel, on the night of the 4th Tuesday in October.

We anticipate better attendance and more interest in our programs this Fall, because of excellent program set up.

Hartung Appointed

The Hydrawlik Company, of Roselle, New Jersey, have announced the appointment of Richard E. Hartung as eastern district sales manager.

BUFFALO

By CLARKE CASSIDY

Save November 19!

Program Committee Chairman Jim Cox has a surprise program of unusual interest on the fire for the November 19 meeting. We suggest you mark this date on your calendar now.

Second Annual Prize Paper Contest

Announcements giving full details of the 1948 Prize Paper Contest for bulletin-board posting have now been distributed to all interested companies and schools in the area, according to George Goepfert, Contest Committee Chairman. (If none have been received by your organization, please contact George at The Carborundum Company in Niagara Falls.) Remember, this year there is no age limit, and everyone is eligible to compete for the $75 local prize, as well as the national awards.

Quality Control

SPE has as a part of its Professional Activities Committee a Subcommittee on Quality Control. Mr. Jerome Formo of Minneapolis-Honeywell Regulator Co. is Chairman of this committee. He has requested a list of the plastics molding plants in this area which use Quality Control methods or may be contemplating such use, as well as the names of individuals who are interested in this work and/or are responsible for such work in their respective plants. Please forward this information to your Secretary who will pass it along to Mr. Formo.

Representative Wanted

Manco Products Co., 2401-2409 Schaefer Road, Melvindale, Mich., is seeking a top-grade man to represent them in a sales capactiy in this territory — offering a five-year contract and selling commission of 10% of net sales. Manco Products manufactures hobbed (TRU CAST) Beryllium Copper cores and cavities for use by injection and compression molders. Contact your Secretary or M. A. Nichols, President of Manco Products directly for further details.

PENN. PERSONALS

By PAUL ROCHE

Applied Plastics Division of Keystone Brass Works, Erie, Pa., was in the headlines recently as recipients of a Modern Plastics Award. This award was based on compression molded plastic "Restraware", Applied's trade name for a very pleasing line of tableware which they distribute as well as manufacture. For development of this line and its volume manufacture and sale, honors go to Lloyd T. Moore (Manager of Applied Plastics and director of the N. W. Penna Section of SPE) and Nat. Reyburn (Chief Engineer at Applied and President of the N. W. Penna Section of SPE). Sharing in the award is American Cyanamid & Chemical Co., producers of Melmac material from which the line is molded.

In addition to its regular activity in the custom molding field of commercial injection molding, NOSCO Plastics of Erie, Pa., has risen into prominence as a manufacturer of toys, which are also distributed by NOSCO. Popular priced polystyrene trains have been produced in quantity by this company, driven by metal windup motors, and styled after well known passenger and freight trains. Also popular are unique scale models of station wagon and bus, body molded in polystyrene and complete windup motor (except coil spring) injection molded in cellulose acetate material of metallic color. Development and tool design were executed by Bruno Roehrl and Harold Cloyd; production and refinement were supervised by Chas. W. Kyner, and distribution was planned by R. W. Wingerter, all SPE members (N. W. Penna Section).

Answer to Thumbnail Sketch: Karl Kithil, Celanese Corporation.

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(From Page 3)

Varnish Base Type Paper	% Volatile	45% Resin	50% Resin	55% Resin
Cresylic Kraft	5.5	1126	967	1054
Cresylic Alpha	6.8	1226	1104	1113
Phenolic Alpha	7.5	1259	1218	1254

CONCLUSIONS

The object of the experiment is to determine the optimum bonding properties of laminated plastics using various variables such as volatile percent, resin content, type base paper and type laminating varnish.

Test results show that a definite specification for volatile, resin content, type of base paper and type of laminating varnish must be met if good bond strength is to be obtained.

According to the few materials tested here, an Alpha type base paper with the phenolic type varnish using a volatile content of approximately 5.00 percent gives the best results in bond strength. The three resin contents tested did not seem to vary too much although this is a point where further work could be done.

Laminating pressures in the lower ranges (500 to 600 PSI) give very good bond strength.

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PLAN TO ATTEND

THE FIFTH ANNUAL

Technical Conference

of the

Society of Plastics Engineers

TIME – January 19, 20 and 21, 1949.

PLACE – PHILADELPHIA at the Bellvue-Stratford Hotel.

WHO – The foremost authorities in the fields of plastics materials, products, engineering, molding technique, and everyone in the business who wants to keep up to date.

WHAT – Presentation of Papers by experts, to help **you** in **your** business – a chance to discuss your problems, to make worthwhile contacts, to broaden your knowledge, and to extend your circle of friendships.

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